

Figure 1

MKLP1 (variant 1) open reading frame (SEQ ID NO:1) and translation to corresponding polypeptide (SEQ ID NO:2)

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MKLP1 var.1 1   atgaagtcagcgagagctaagacaccccgaaacctaccgtgaaaaaagggtcccaaacg
                1   M K S A R A K T P R K P T V K K G S Q T
MKLP1 var.1 61   aaccttaaagacccagttgggtatactgtagggtgcgccactgggcttctctgatcaa
10              21   N L K D P V G V Y C R V R P L G F P D Q
MKLP1 var.1 121  gagtggtgcatagaagtgtatcaataatacaactgttcagcttcatactcctgagggtac
                41   E C C I E V I N N T T V Q L H T P E G Y
MKLP1 var.1 181  agactcaaccgaaatggagactataaggagactcagtattcatttaaacaagtatttggc
                61   R L N R N G D Y K E T Q Y S F K Q V F G
15 MKLP1 var.1 241  actcacaccacccagaaggaactctttgatgttgggctaatcccttggtcaatgacctc
                81   T H T T Q K E L F D V V A N P L V N D L
MKLP1 var.1 301  attcatggcaaaaatgggtcttctttttacatatgtgtgacgggaagtggaaaaactcac
                101  I H G K N G L L F T Y G V T G S G K T H
MKLP1 var.1 361  acaatgactggttctccaggggaaggagggtgcttcctcgttgtttggacatgatcttt
20              121  T M T G S P G E G G L L P R C L D M I F
MKLP1 var.1 421  aacagtatagggtcattttcaagctaaacgataigilittcaaatctaatgatagggaatagt
                141  N S I G S F Q A K R Y V F K S N D R N S
MKLP1 var.1 481  atggatatacagtgtgaggttgatgccttattagaacgtcagaaaagagaagctatgccc
                161  M D I Q C E V D A L L E R Q K R E A M P
25 MKLP1 var.1 541  aatccaaagacttcttctagcaaacgacaagtagatccagagtttgagatatgataact
                181  N P K T S S S K R Q V D P E F A D M I T
MKLP1 var.1 601  gtacaagaattctgcaaagcagaagaggttgatgaagatagtgcttatggtgtatttgtc
                201  V Q E F C K A E E V D E D S V Y G V F V
MKLP1 var.1 661  tcttatattgaaatatataataattacatatatgatctattggaagaggtgccgtttgat
30              221  S Y I E I Y N N Y I Y D L L E E V P F D
MKLP1 var.1 721  cccataaaacccaaacctccacaatctaaattgcttcgtgaagataagaaccataacatg
                241  P I K P K P P Q S K L L R E D K N H N M
MKLP1 var.1 781  tatgttgaggatgtacagaagttgaagtgaatctactgaggaggcttttgaagttttc
                261  Y V A G C T E V E V K S T E E A F E V F
35 MKLP1 var.1 841  tggagaggccagaaaaagagacgtattgctaatacccatttgaatcgtgagtcagcccg
                281  W R G Q K K R R I A N T H L N R E S S R
MKLP1 var.1 901  tcccatagcgtgttcaacattaaattagttcaggctcccttggtgagatggagacaat
                301  S H S V F N I K L V Q A P L D A D G D N
MKLP1 var.1 961  gtcttacaggaaaaagaacaaatcactataagtcagttgtccttggtagatcttgctgga
40              321  V L Q E K E Q I T I S Q L S L V D L A G
MKLP1 var.1 1021 agtgaaagaactaaccggaccagagcagaagggaacagattacgtgaagctggtaatatt
                341  S E R T N R T R A E G N R L R E A G N I

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Applicants: Paz Einat et al.

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Title: MITOTIC KINESIN-LIKE PROTEIN-1,
MKLP1, AND USES THEREOF

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MKLP1 var.1 1081 aatcagtcactaatgacgctaagaacatgtatggatgtcctaagagagaaccaaagtgtat
 361 N Q S L M T L R T C M D V L R E N Q M Y
 MKLP1 var.1 1141 ggaactaacaagatggttccatatacgagattcaaagttaaccatctgttcaagaactac
 381 G T N K M V P Y R D S K L T H L F K N Y
 5 MKLP1 var.1 1201 tttgatggggaaggaagaaagtcgggatgatcgtgtgtgtgaacccaaggctgaagattat
 401 F D G E G K V R M I V C V N P K A E D Y
 MKLP1 var.1 1261 gaagaaaacttgcaagtcagatgatttgcggaagtgactcaagaagttgaagtagcaaga
 421 E E N L Q V M R F A E V T Q E V E V A R
 MKLP1 var.1 1321 cctgtagacaaggcaatatgtgtgtttaacgcctgggaggagatacagaaaccagcctcga
 441 P V D K A I C G L T P G R R Y R N Q P R
 10 MKLP1 var.1 1381 ggtccagttgaaatgaaccattggttactgacgtggttttcagagttttccacctttg
 461 G P V G N E P L V T D V V L Q S F P P L
 MKLP1 var.1 1441 ccgcatgcgaaattttggatatcaacgatgagcagacacttccaaggctgattgaagcc
 481 P S C E I L D I N D E Q T L P R L I E A
 15 MKLP1 var.1 1501 ttagagaaacgacataaacttacgacaaatgatgattgatgagtttaacaaacaatcta
 501 L E K R H N L R Q M M I D E F N K Q S N
 MKLP1 var.1 1561 gcttttaagcctttgttacaagaatttgacaatgctgttttaagtaaagaaaaccacatg
 521 A F K A L L Q E F D N A V L S K E N H M
 MKLP1 var.1 1621 caagggaaactaaatgaaaaggagaagatgatctcaggacagaaaattggaaatagaacga
 541 Q G K L N E K E K M I S G Q K L E I E R
 20 MKLP1 var.1 1681 ctggaaaagaaaaacaaaacttttagaatataagattgagatttttagagaaaaaactact
 561 L E K K N K T L E Y K I E I L E K T T T
 MKLP1 var.1 1741 atctatgaggaagataaacgcaatttgcaacaggaacttgaaactcagaaccagaaactt
 581 I Y E E D K R N L Q Q E L E T Q N Q K L
 25 MKLP1 var.1 1801 cagcgacagttttctgacaaacgcagattagaagccagggttgcaaggcatggtgacagaa
 601 Q R Q F S D K R R L E A R L Q G M V T E
 MKLP1 var.1 1861 acgacaatgaagtgggagaaagaatgtgagcgtagagtggcagccaaacagctggagatg
 621 T T M K W E K E C E R R V A A K Q L E M
 MKLP1 var.1 1921 cagaataaactctgggttaaagatgaaaagctgaaacaactgaaggctattgttactgaa
 641 Q N K L W V K D E K L K Q L K A I V T E
 30 MKLP1 var.1 1981 cctaaaactgagaagccagagagaccctctcgggagcgagatcgagaaaaagtactcaa
 661 P K T E K P E R P S R E R D R E K V T Q
 MKLP1 var.1 2041 agatctgtttctccatcacctgtgcctctttctagtaactatattgctcagatttccaac
 681 R S V S P S P V P L S S N Y I A Q I S N
 35 MKLP1 var.1 2101 ggccagcaactcatgagccagccacagctacatagcgctctaactcttgacgacgatt
 701 G Q Q L M S Q P Q L H R R S N S C S S I
 MKLP1 var.1 2161 tctgtagcttctgtatttccgaatgggagcagaaaaattcctacgtacaacacacctctc
 721 S V A S C I S E W E Q K I P T Y N T P L
 MKLP1 var.1 2221 aaagtcacatctattgcaaggcgtaggcagcaggagccaggacaaagcaaaacttgatc
 741 K V T S I A R R R Q Q E P G Q S K T C I
 40 MKLP1 var.1 2281 gtgtcagacagaaggcgagggtgtactggactgaaggcaggagggtggttcctacattc
 761 V S D R R R G M Y W T E G R E V V P T F
 MKLP1 var.1 2341 agaaatgagatagaaatagaagaggatcattgcggcagggttactctttcaacctgatcag
 781 R N E I E I E E D H C G R L L F Q P D Q

MKLP1 var.1 2401 aacgcaccaccaattcgctctccgacacagacgatcacgctctgcaggagacagatgggta
 801 N A P P I R L R H R R S R S A G D R W V
 MKLP1 var.1 2461 gatcataagcccgctctaacaatgcaaactgaaacagtcatgcagccacatgtccctcat
 821 D H K P A S N M Q T E T V M Q P H V P H
 5 MKLP1 var.1 2521 gccatcacagtatctgttgcaaataaaaaggcactagctaagtgtgagaagtacatgctg
 841 A I T V S V A N E K A L A K C E K Y M L
 MKLP1 var.1 2581 acccaccaggaactagcctccgatgggagattgaaactaaactaattaagggatatt
 861 T H Q E L A S D G E I E T K L I K G D I
 MKLP1 var.1 2641 tataaaacaaggggtggggacaatctgttcagtttactgatattgagactttaagcaa
 10 881 Y K T R G G G Q S V Q F T D I E T L K Q
 MKLP1 var.1 2701 gaatcaccaaattgtagtcgaaaacgaagatcttcacagtagcacctgcccaaccagat
 901 E S P N G S R K R R S S T V A P A Q P D
 MKLP1 var.1 2761 ggtgcagagtctgaatggaccgatgtagaaacaagggtgttctgtggctgtggagatgaga
 921 G A E S E W T D V E T R C S V A V E M R
 15 MKLP1 var.1 2821 gcaggatcccagctgggacctggatatcagcatcacgcacaaccaagcgcaaaaagcca
 941 A G S Q L G P G Y Q H H A Q P K R K K P
 MKLP1 var.1 2881 tga
 961 *

Figure 2**MKLP1 Antisense fragment**

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5' TGCTCTGGGTCAGTGTATGATGTAGCTGAGGTCCGTGATTTTAACAAAGCTGGAGTTC
TACAAGATGACCTGGAAGACTGCTTCTGGCATGGCTTTCGAGAAATCATCCACACAAATG
AAAATGTTCTTTCAGTACTGGGACTGTCTAGTTCATGGCTTTTGCGCTTGGGTTGTGCGTG
ATGCTGATATCCAGGTCCCAGCT 3'

10

Figure 3

Alignment between the MKLP1 open reading frame and the MKLP1 antisense fragment

5	MKLP1 var.2	1	GCAGAGCACCGCGCCTTAGCCGCGAAGTTCTAGTTCTTGCTGCCGGTCCTAACGTCCCGC
	MKLP1 AS	1	-----
	MKLP1 var.2	61	AGTCTTCGCCAGCCAGCCGTCCCGCATGCGCGTTTGGGCGGCGTGGAGCCTGCTGCCATG
	MKLP1 AS	1	-----
10	MKLP1 var.2	121	AAGTCAGCGAGAGCTAAGACACCCCGGAAACCTACCGTGAAAAAGGGTCCCAAACGAAC
	MKLP1 AS	1	-----
	MKLP1 var.2	181	CTTAAAGACCCAGTTGGGGTATACTGTAGGGTGCGCCACTGGGCTTTCCTGATCAAGAG
	MKLP1 AS	1	-----
	MKLP1 var.2	241	TGTTGCATAGAAGTGATCAATAATACAACGTTCAGCTTCATACTCCTGAGGGCTACAGA
15	MKLP1 AS	1	-----
	MKLP1 var.2	301	CTCAACCGAAATGGGAGACTATAAGGAGACTCAGTATTCATTTAAACAAGTATTTGGCACT
	MKLP1 AS	1	-----
	MKLP1 var.2	361	CACACCACCCAGAAGGAACCTTTTGATGTTGTGGCTAATCCCTTGGTCAATGACCTCATT
	MKLP1 AS	1	-----
20	MKLP1 var.2	421	CATGGCAAAATGGTCTTCTTTTACATATGGTGTGACGGGAAGTGAAAAACTCACACA
	MKLP1 AS	1	-----
	MKLP1 var.2	481	ATGACTGGTCTCCAGGGGAAGGAGGGCTGCTTCCTCGTTGTTTGGACATGATCTTTAAC
	MKLP1 AS	1	-----
	MKLP1 var.2	541	AGTATAGGGTCATTTCAAGCTAAACGATATGTTTCAAATCTAATGATAGGAATAGTATG
25	MKLP1 AS	1	-----
	MKLP1 var.2	601	GATATACAGTGTGAGGTTGATGCCTTATTAGAACGTCAGAAAAGAGAAGCTATGCCCAAT
	MKLP1 AS	1	-----
	MKLP1 var.2	661	CCAAAGACTTCTTCTAGCAAACGACAAGTAGATCCAGAGTTGCAGATATGATAACTGTA
	MKLP1 AS	1	-----
30	MKLP1 var.2	721	CAAGAATTCTGCAAAGCAGAAGAGGTTGATGAAGATAGTGTCTATGGTGTATTTGTCTCT
	MKLP1 AS	1	-----
	MKLP1 var.2	781	TATATTGAAATATATAATAATTACATATATGATCTATTGGAAGAGGTGCCGTTTGATCCC
	MKLP1 AS	1	-----
	MKLP1 var.2	841	ATAAAACCCAAACCTCCACAATCTAAATTGCTTCGTGAAGATAAGAACCATAACATGTAT
35	MKLP1 AS	1	-----
	MKLP1 var.2	901	GTTGCAGGATGTACAGAAGTTGAAGTGAAATCTACTGAGGAGGCTTTTGAAGTTTCTGG
	MKLP1 AS	1	-----
	MKLP1 var.2	961	AGAGGCCAGAAAAAGAGACGTATTGCTAATACCCATTTGAATCGTGAGTCCAGCCGTTCC
	MKLP1 AS	1	-----
40	MKLP1 var.2	1021	CATAGCGTGTTC AACATTAAATTAGTTTCAGGCTCCCTTGGATGCAGATGGAGACAATGTC
	MKLP1 AS	1	-----
	MKLP1 var.2	1081	TTACAGGAAAAAGAACAAATCACTATAAGTCAGTTGTCCTTGGTAGATCTTGCTGGAAGT
	MKLP1 AS	1	-----

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MKLP1 var.2 1141 GAAAGAACTAACCGGACCAGAGCAGAAGGGAACAGATTACGTGAAGCTGGTAATATTAAT
MKLP1 AS 1 -----
MKLP1 var.2 1201 CAGTCACTAATGACGCTAAGAACATGTATGGATGTCCTAAGAGAGAACCAAATGTATGGA
MKLP1 AS 1 -----
5 MKLP1 var.2 1261 ACTAACAAGATGGTTCCATATCGAGATTCAAAGTTAACCCATCTGTTCAAGAACTACTTT
MKLP1 AS 1 -----
MKLP1 var.2 1321 GATGGGGAAGGAAAAGTGCGGATGATCGTGTGTGTGAACCCCAAGGCTGAAGATTATGAA
MKLP1 AS 1 -----
MKLP1 var.2 1381 GAAAACCTGCAAGTCATGAGATTTGCGGAAGTGACTCAAGAAAGTTGAAGTAGCAAGACCT
10 MKLP1 AS 1 -----
MKLP1 var.2 1441 GTAGACAAGGCAATATGTGGTTTAACGCCTGGGAGGAGATACAGAAACCAGCCTCGAGGT
MKLP1 AS 1 -----
MKLP1 var.2 1501 CCAGTTGGAAATGAACCATTGGTTACTGACGTGGTTTTGCAGAGTTTTCCACCTTTGCCG
MKLP1 AS 1 -----
15 MKLP1 var.2 1561 TCATGCGAAATTTTGGATATCAACGATGAGCAGACACTTCCAAGGCTGATTGAAGCCTTA
MKLP1 AS 1 -----
MKLP1 var.2 1621 GAGAAACGACATAACTTACGACAAATGATGATTGATGAGTTTAAACAAACATCTAATGCT
MKLP1 AS 1 -----
MKLP1 var.2 1681 TTAAAGCTTTGTTACAAGAATTTGACAATGCTGTTTTAAGTAAAGAAAACCACATGCAA
20 MKLP1 AS 1 -----
MKLP1 var.2 1741 GGGAAACTAAATGAAAAGGAGAAGATGATCTCAGGACAGAAATTGGAAATAGAACGACTG
MKLP1 AS 1 -----
MKLP1 var.2 1801 GAAAAGAAAAACAAAACCTTAGAATATAAGATTGAGATTTTAGAGAAAAACAACTACTATC
MKLP1 AS 1 -----
25 MKLP1 var.2 1861 TATGAGGAAGATAAACGCAATTTGCAACAGGAAGTTGAACTCAGAACCAGAACTTCAG
MKLP1 AS 1 -----
MKLP1 var.2 1921 CGACAGTTTCTGACAAACGCAGATTAGAAGCCAGGTTGCAAGGCATGGTGACAGAAACG
MKLP1 AS 1 -----
MKLP1 var.2 1981 ACAATGAAGTGGGAGAAAGAATGTGAGCGTAGAGTGGCAGCCAAACAGCTGGAGATGCAG
30 MKLP1 AS 1 -----
MKLP1 var.2 2041 AATAAACTCTGGGTAAAGATGAAAAGCTGAAACAACTGAAGGCTATTGTTACTGAACCT
MKLP1 AS 1 -----
MKLP1 var.2 2101 AAAACTGAGAAGCCAGAGAGACCCTCTCGGGAGCGAGATCGAGAAAAAGTTACTCAAAGA
MKLP1 AS 1 -----
35 MKLP1 var.2 2161 TCTGTTTCTCCATCACCTGTGCCTTTACTCTTTCAACCTGATCAGAACGCACCAACCAATT
MKLP1 AS 1 -----
MKLP1 var.2 2221 CGTCTCCGACACAGACGATCACGCTCTGCAGGAGACAGATGGGTAGATCATAAGCCCGCC
MKLP1 AS 1 -----
MKLP1 var.2 2281 TCTAACATGCAAACTGAAACAGTCATGCAGCCACATGTCCCTCATGCCATCACAGTATCT
40 MKLP1 AS 1 -----
MKLP1 var.2 2341 GTTGCAAATGAAAAGGCACTAGCTAAGTGTGAGAAGTACATGCTGACCCACCAGGAACTA
MKLP1 AS 1 -----
MKLP1 var.2 2401 GCCTCCGATGGGGAGATTGAACTAACTAATTAAGGGTGATATTTATAAAACAAGGGGT
MKLP1 AS 1 -----

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MKLP1 var.2 2461 GGTGGACAATCTGTTTCAGTTTACTGATATTGAGACTTTAAAGCAAGAATCACCAAATGGT
MKLP1 AS 1 -----
MKLP1 var.2 2521 AGTCGAAAACGAAGATCTTCCACAGTAGCACCTGCCCAACCAGATGGTGCAGAGTCTGAA
MKLP1 AS 1 -----
5 MKLP1 var.2 2581 TGGACCGATGTAGAAACAAGGTGTTCTGTGGCTGTGGAGATGAGAGCAGGATCCCAGCTG
MKLP1 AS 1 -----AGCTG
MKLP1 var.2 2641 GGACCTGGATATCAGCATCACGCACAACCCAAGCGCAAAAAGCCATGAACTGACAGTCCC
MKLP1 AS 6 GGACCTGGATATCAGCATCACGCACAACCCAAGCGC-AAAAGCCATGAACTGACAGTCCC
MKLP1 var.2 2701 AGTACTGAAAGAACATTTTCATTTGTGTGGATGATTCTCGAAAGCCATGCCAGAAGCAG
10 MKLP1 AS 65 AGTACTGAAAGAACATTTTCATTTGTGTGGATGATTCTCGAAAGCCATGCCAGAAGCAG
MKLP1 var.2 2761 TCTTCCAGGTCATCTTGTAGAACTCCAGCTTTGTTGAAAATCACGGACCTCAGCTACATC
MKLP1 AS 125 TCTTCCAGGTCATCTTGTAGAACTCCAGCTTTGTT-AAAATCACGGACCTCAGCTACATC
MKLP1 var.2 2821 ATACACTGACCCAGAGCAAGCTTTCCTATGGTTCCAAAGACAAC TAGTATTCAACAAA
MKLP1 AS 184 ATACACTGACCCAGAGCA-----
15 MKLP1 var.2 2881 CCTTGTATAGTATATGTTTGGCCATATTTAATATTAATAGCAGAGGAAGACTCCTTTTTTT
MKLP1 AS 201 -----
MKLP1 var.2 2941 CATCACTGTATGAATTTTTTATAATGTTTTTTTAAAATATATTTTCATGTATACTTATAAA
MKLP1 AS 201 -----
MKLP1 var.2 3001 CTAATTCACACAAGTGTTTGTCTTAGATGATTAAGGAAGACTATATCTAGATCATGTCTG
20 MKLP1 AS 201 -----
MKLP1 var.2 3061 ATTTTTTTATTGTGACTTCTCCAGCCCTGGTCTGAATTTCTTAAGGTTTATAAACAATG
MKLP1 AS 201 -----
MKLP1 var.2 3121 CTGCTATTTATTAGCTGCAAGAATGCACTTTAGAACTATTTGACAATTCAGACTTTCAAA
MKLP1 AS 201 -----
25 MKLP1 var.2 3181 ATAAAGATGTAAATGACTGGCCAATAATAACCATTTTAGGAAGGTGTTTGAATTCTGTA
MKLP1 AS 201 -----
MKLP1 var.2 3241 TGTATATATTCACCTTCTGACATTTAGATATGCCAAAAGAATTAAATCAAAAGCACTAA
MKLP1 AS 201 -----
MKLP1 var.2 3301 GAAATAAAAAAAAAAAAAAAAAAAAA
30 MKLP1 AS 201 -----

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Figure 4

MKLP1 siRNA (SEQ ID NO:4)

5 5' AAGTATTTGGCACTCACACCA '3

Figure 5

Validation of the anti-apoptotic effect of MKLP1 -**Sensitization to FAS mediated apoptosis by MKLP1 AS fragment and****5 MKLP1 siRNA ("RNAi")**